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Ministry of the ENVIRONMENT

Water Pollution Survey Community of MacTier Township of Georgian Bay

1972

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MINISTRY OF THE ENVIRONMENT

135 ST. CLAIR AVENUE WEST
TORONTO 195, ONTARIO

Tel. 965-6967

September 18, 1972.

District Municipality of Muskoka,
Pine Street,
P. O. Box 1720,
Bracebridge, Ontario.

Attention: Mr. G. G. Williams, Clerk.

Dear Sir:

Re: Township of Georgian Bay. Community of MacTier Water Pollution
Survey Report.

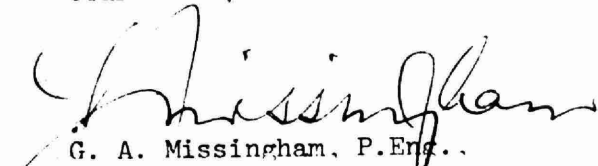
Enclosed is a copy of a water pollution survey report on the community of MacTier. The survey was conducted to determine if pollution conditions in the community have changed since the previous survey of 1965.

It was found that malfunctioning septic tank systems still remain a problem with domestic sewage gaining access to the local creeks and drainage ditches flowing to Lake Stewart. The water quality of the local creeks which flow through the community has deteriorated such that the creeks are considered to be contaminated.

As a result, we have recommended that municipal water pollution control facilities should be developed for the community of MacTier.

After Council has had a chance to read this report we would appreciate receiving your comments.

Yours truly,


G. A. Missingham, P. Eng.,
District Engineer,
Sanitary Engineering Branch.

GB/dl

DISTRIBUTION LIST

TOWNSHIP OF GEORGIAN BAY

COMMUNITY OF MACTIER WATER POLLUTION SURVEY REPORT

Mr. G.G. Williams, Clerk,
District Municipality of Muskoka,
Pine Street,
P. O. Box 1720,
Bracebridge, Ontario.

Mr. W.A. Grigg,
Township of Georgian Bay,
Box 119,
MacTier, Ontario.

Mr. S. J. Watts, District Engineer,
District Municipality of Muskoka,
Box 1720,
Bracebridge, Ontario.

Dr. W.H. Bennett, Medical Officer of Health,
Muskoka Parry Sound District Health Unit,
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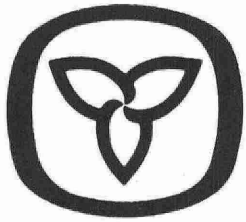
TOWNSHIP OF GEORGIAN BAY

COMMUNITY OF MACTIER WATER POLLUTION SURVEY REPORT

Hon. J.A.C. Auld
Minister
Ministry of the Environment
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REPORT
ON A
WATER POLLUTION SURVEY
OF THE
COMMUNITY OF MACTIER
TOWNSHIP OF GEORGIAN BAY

1972

District Engineers **Section**
Sanitary Engineering Branch

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INTRODUCTION

A follow-up water pollution survey was made in the community of Mactier on May 9, 1972 to re-assess the conditions of sewage disposal systems in the community and the effects on the water quality of local storm drainage systems and watercourses.

The initial water pollution survey was conducted in August and October, 1965 and it was found that contaminating wastes were gaining access to the local drainage watercourses which flow through the community to Lake Stewart. Laboratory results of samples collected from the small watercourses indicated significant bacteriological and organic pollution. The water quality of Lake Stewart was generally satisfactory; however, it was forewarned that continued pollution of these small watercourses could result in future deterioration of the water quality in Lake Stewart.

I SUMMARY AND CONCLUSIONS

A follow-up water pollution survey was made in the community of Mactier on May 9, 1972 to determine if the pollution conditions in the community had changed since the previous survey of 1965.

It was found that malfunctioning septic-tank systems still remain a problem with domestic sewage gaining access to the local creeks and drainage ditches flowing to Lake Stewart. Bacteriological examination of samples collected from the creeks indicate that the discharges of domestic wastes are deteriorating the water quality and the creeks are considered to be contaminated and unsafe for body contact use. Although the creeks and ditches flow to Lake

Stewart, the bacteriological water quality of Lake Stewart did not appear to be effected at the time of the survey, possibly due to the dilution factor of the spring runoff and the lake itself. However, this does not rule out the possibility that the water quality may become affected, especially in the area of public beach.

The Muskoka-Parry Sound Health Unit has indicated that many of the septic-tank systems are inadequate and with the ponding of sewage on the ground from outbreaks in the tile beds, a serious health hazard is presented because bacteria and viruses can be spread by flies and rodents.

A Provincial Sewage Works Program was initiated in 1967; however due to the cost of the project, the proposal was unacceptable to the municipality. Every effort should be made to have this sewage works project realized to eliminate the pollution problems in the community and to alleviate the potential health hazard which exists.

II RECOMMENDATION

Municipal water pollution control facilities should be developed for the community of Mactier.

III GENERAL

The community of Mactier with an approximate population of 850 is located on the west shore of Lake Stewart in the Township of Georgian Bay (Freeman Township) near the junction of Highways No. 103 and No. 69 in the District Municipality of Muskoka.

Mactier was once a major railway community with the CPR operating a marshalling yards and being the major employer of the working population. However, the importance of the railway as a major employer has somewhat diminished in the past few years. The township clerk's office and works department are located in the community along with a number of small commercial establishments. During the summer months the community becomes a centre for the influx of tourists to this recreational area.

The more densely populated area of the community is served by a municipal water works system; on the outlying areas privately-owned individual wells are utilized. There is no municipal sewage works system and sewage disposal is by septic-tank and subsurface tile-bed systems and also pit privies.

Drainage in the community is provided by open roadside ditches and two small creeks which emanate from a swampy area south-west of the community and flow easterly through the community to Lake Stewart. The topography of the land is quite uneven with predominant bedrock outcroppings and with very little soil overburden above the bedrock.

IV WATER SUPPLIES

1. Municipal

The municipal water supply is obtained from Lake Stewart. Water flows by gravity via 140 feet of 10-inch diameter galvanized pipe to the pumphouse wet well. There are two vertical turbine pumps at the pumphouse which may be operated in parallel for a total capacity of approximately 600,000 gpd. For normal use, one service pump is used with a capacity of 310,000 gpd. One of the service pumps may be used for emergency standby purposes driven by a diesel unit. Chlorination is the only treatment provided with chlorine being applied

into the wet well.

There are approximately 210 service connections on the water distribution system serving 85 - 90 per cent of the community. From the water meter readings obtained over the past few years, the average daily per capita consumption has varied considerably from 92 gpcd to 338 gpcd with no actual consistency.

2. Private

The remaining portion of the community not on municipal water utilize individual well supplies.

The CPR operates a non-potable water supply utilizing Lake Stewart for use in the rail yards.

3. Recreational

Lake Stewart is used quite extensively for boating, fishing and swimming.

V WATER POLLUTION CONTROL FACILITIES

1. Municipal

a) Existing

There is no municipal sewage works facilities in the community. Septic-tank and subsurface tile-bed systems are utilized predominantly for sewage disposal with also a few pit privies in use. Because of limited overburden and swamp conditions, subsurface tile-bed systems are not functioning satisfactorily.

b) Future

The former Township of Freeman requested the development of a

Provincial sewage works program in 1967 for the community of Mactier. A consulting engineer was retained to prepare a report on the sewage works requirements for the community and the report was approved in the latter part of 1968. Based on the sewage requirements in the report, a financial analysis was undertaken and a cost proposal was submitted to Council but was rejected as being excessive.

Although efforts were made to reduce the cost factor by including the 50% Provincial assistance and C.M.H.C. financing and also by deleting a portion of the sewer collector system, Council further rejected the rate as being too high. Council recognizes the need for a sewage works system and are willing to proceed with the project if further financial assistance is acquired.

2. Private

a) CPR Apartment Houses

The CPR apartment houses consist of 3 duplexes housing 6 family units and are served by a two compartment septic-tank of 2,000 gallons capacity. Reportedly, there are 800 feet of weeping tile. The tile bed has malfunctioned intermittently in the past years with leachate gaining access to a road side ditch which drains to the public beach area of Lake Stewart.

b) Rickett's Laundromat

The Muskoka-Parry Sound Health Unit reported that this laundromat is located in a low-lying swampy area in which leachate from the tile bed continually discharges to the swampy area.

VI SAMPLE RESULTS

1. Creek 'A'

A bacteriological sample collected from Creek A at Joseph Street

before it enters the more densely populated area of the community indicated high total coliform and fecal coliform counts of 8,000 and 250 mg/l, respectively. A downstream sample collected at High Street showed an increase in the coliform counts, 25,000 total coliforms and 1,350 fecal coliforms, indicating that domestic wastes were present.

Chemical and bacteriological samples were collected from two locations on Fern Avenue where it appeared that leachate was breaking out from the subsurface tile beds. The laboratory results substantiated this finding; the chemical results revealed an excessive BOD and suspended solids concentration along with a high detergent concentration. Also the coliform counts were extremely high indicating the discharges were contaminated wastes of human origin. These wastes then discharged to Creek A.

A bacteriological sample collected from Creek A downstream from the community showed an even greater increase in total coliform and fecal coliform counts at 110,000 and 10,000, respectively, indicating the creek is contaminated as a result of human wastes gaining access to it from the community.

2. Creek 'B'

Bacteriological and chemical samples were collected from Creek B at a location behind the township office. Chemical analyses showed a high BOD indicating a deteriorating water quality; also a high coliform count was obtained signifying that domestic wastes were gaining access to this creek west of High Street.

North of Haig Street, the creek enters a storm sewer system which drains the High Street and Front Street area which is the commercial centre of the community. Chemical and bacteriological samples were collected from the catchbasins

at High and Front streets and the sample results indicated further deterioration of the water quality by human wastes. This reveals that there are probably connections of septic-tank systems to the storm sewers from residential and business premises in this section. The creek is then directed via the storm sewer to a swampy area to the south of the community.

A bacteriological sample collected from the outlet of this swamp where it flows to Lake Stewart showed a low coliform count indicating that the swamp has offered some dilution to the discharge of domestic wastes.

3. Stewart Street Drainage Ditch

The Stewart Street ditch drains to Stewart Lake at the public beach area. The subsurface tile bed serving the CPR apartments is located adjacent to the ditch on the west side. A bacteriological sample collected from the ditch at the culvert before entering Stewart Lake revealed a high coliform count; however, the fecal coliform count was small indicating that domestic wastes were introduced to the ditch some time ago and not recently. No leachate from the tile bed was noticed at the time of the survey.

4. Stewart Lake

Bacteriological examination of samples collected along the shore of Lake Stewart showed the bacteriological water quality to be satisfactory for recreational purposes at the time of sampling. The bacteriological water quality was not affected by the discharges from the drainage systems possibly due to the dilution factor from the spring runoff and the lake.

VII DISCUSSION

This follow-up water pollution survey of the community of Mactier has shown that there has been little change in the pollution conditions in the community. The bacteriological water quality of Creeks A and B becomes increasingly deteriorated as they flow through the community. The creeks can be considered polluted and unsafe for body contact use. Impairment of the creeks is caused by the discharges of domestic wastes from malfunctioning septic-tank systems. Soil conditions and the bedrock outcroppings and also low-lying swampy areas are unsatisfactory for the proper operation of septic-tank systems; small lot sizes also compound the problem.

Although the survey at the time did not show deterioration of the bacteriological water quality of Lake Stewart possibly due to the dilution factor of this body of water and also the amount of spring runoff water, there remains the potentiality that Lake Stewart could at any time be seriously affected by discharges of domestic wastes from the community. A discharge from the Stewart Street ditch which drains to the public bathing area for the community contained a coliform count which would render the contents in the ditch as being unsafe for human body contact. Every effort should be made to develop a sewage works project for the community.

The Muskoka-Parry Sound Health Unit has reported that, in the past years many sewage disposal systems in the community have been shown to be inadequate causing ponding of the effluent on the ground surface. Because of the nature of the terrain and small-sized lots, the health unit has found that only minimal correction can be made on the majority of the faulty systems and this was only temporary as the systems would break down again.

The health unit points out that with the ponding of septic tank effluent on the ground surface, a serious danger to health arises as bacteria and viruses could be spread by flies and rodents and with the close environment of the community, this health hazard is greatly increased.

Prepared by:.....*G. K. Boretski*.....
G. K. Boretski, Civil Technologist
District Engineers Section
Sanitary Engineering Branch

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK A

SAMPLING POINT	DESCRIPTION	DATE	5-DAY	SUSP. SOLIDS	MBAS as LAS	NITROGEN as N Total Kjeldahl	TOTAL PHOSPHORUS	BACTERIOLOGICAL EXAMINATION		
			BOD ppm					Total Coliforms	Fecal Coliforms	Fecal Streptococcus
A-1	Creek 'A' upstream, southside of Joseph & Centre streets	25/8/65	1.2	37	-	-	-	300		
		14/10/65	-	-	-	-	-	150	23	
		9/5/72	2.0	10	0.2	.80	.19	8,000	250	< 10
A-2	Creek 'A' southside of High Street	25/8/65	4.6	16	-	-	-	200,000		
		14/10/65	-	-	-	-	-	1,500	230	
		9/5/72	1.2	10	0.1	.50	.035	25,000	1,350	540
M-3	Drainage from Muskoka Road sampled on east side of Fern Avenue	9/5/72	1.2	5	0.1	.26	.012	20	< 10	20
M-2	Seepage from east side of Fern Street sampled at culvert	9/5/72	110	50	7.0	7.5	1.1	450,000	2,300	< 100
M-1	Seepage from east side of Fern Street sampled at culvert	9/5/72	95	160	10	19.0	11.0	100,000,000	600	28,000
A-3	Creek 'A' west side of Fern Street	25/8/65	2.2	12				50,000		
		14/10/65						4,300	230	
A-4	Creek 'A' downstream behind Twp. works dept. garage	25/8/65	2.4	6	-	-	-	10,000		
		14/10/65	-	-	-	-	-	24,000	230	
		9/5/72	1.8	5	0.3	1.3	.25	110,000	10,000	440

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - CREEK B

SAMPLING POINT	DESCRIPTION	DATE	5-DAY BOD ppm	SUSP. SOLIDS	MBAS as LAS	NITROGEN as N Total Kjeldahl	TOTAL PHOSPHORUS	BACTERIOLOGICAL EXAMINATION		
								Total Coliforms	Fecal Coliforms	Fecal Streptococcus
B-5	Creek 'B' upstream, behind Township office	9/5/72	9.0	60	0.5	4.5	.50	140,000	150	70
B-1	Catchbasin west of High & Front streets	25/8/65	11	38	-	-	-	400,000		
		14/10/65	-	-	-	-	-	110,000	24,000	
		9/5/72	15	100	0.6	4.5	.75	10,200,000	3,500	1,170
B-2	Catchbasin south of Front Street	25/10/65	5.6	20	-	-	-	200,000		
		14/10/65	-	-	-	-	-	110,000	110,000	
		9/5/72	16	50	1.2	5.5	1.2	9,800,000	150,000	4,000
B-7	Outfall from basement sump	9/5/72	3.0	30	-	2.5	.10	30	< 10	< 10
B-6	Drainage from CPR Station	9/5/72	3.0	20	0.1	1.3	.10	10	< 10	< 10
B-3	Creek 'B' downstream	25/8/65	16	74				800,000		
		14/10/65						110,000	110,000	
B-4	Creek 'B' downstream from swamp area	25/8/65	1.1	2				1,000		
		14/10/65						110,000	110,000	
		9/5/72						130	10	10

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - MISCELLANEOUS

SAMPLING POINT	DESCRIPTION	DATE	5-DAY	SOLIDS			NITROGEN as N Total Kjeldahl	TOTAL PHOSPHORUS	BACTERIOLOGICAL EXAMINATION		
			BOD ppm	Tot.	Susp.	Diss.			Total Coliforms	Fecal Coliforms	Fecal Streptococcus
B-8	Drainage ditch west of pumphouse at Beech Avenue	9/5/72	1.0		5		.50	.02	40	10	10
R-1	Drainage ditch at Stewart Street	25/8/65	63	1048	668	380	-	-	2,600,000	-	-
		14/10/65	-	-	-	-	-	-	9,300	430	-
		9/5/72	0.8	-	5	-	1.0	.05	11,400	10	10

TOWNSHIP OF GEORGIAN BAY - MACTIER WATER POLLUTION SURVEY - LAKE STEWART

SAMPLING POINT	DESCRIPTION	DATE	5-DAY BOD ppm	SUSPENDED SOLIDS	BACTERIOLOGICAL EXAMINATION		
					Total Coliforms	Fecal Coliforms	Fecal Streptococcus
LS-1	Stewart Lake	25/8/65	0.7	3	200	-	-
		14/10/65			23	0	-
LS-2	Stewart Lake	25/8/65	0.9	5	200	-	-
		14/10/65			23	0	-
LS-3	Stewart Lake	25/8/65	0.6	4	200	-	-
		14/10/65			9	0	-
		9/5/72			76	1	1
LSC-3A	Stewart Lake at pumphouse	9/5/72			268	4	1
LS-4	Stewart Lake at Beach	25/8/65	0.8	9	100	-	-
		14/10/65			9	0	-
		9/5/72			124	1	1
LS-5	Stewart Lake	25/8/65	0.9	5	100	-	-
		14/10/65			4	0	-
		9/5/72			144	1	4
LS-6	Stewart Lake at	25/8/65	0.4	3	100	-	-
		14/10/65			15	0	-
		9/5/72			72	1	1
LS-7	Stewart Lake	25/8/65	0.5	4	200	-	-
		14/10/65	0.4	5	43	0	-
		9/5/72			60	1	1
LS-8	Stewart Lake	25/8/65			200	-	-
		14/10/65			43	0	-

APPENDIX I

WATER QUALITY AND EFFLUENT OBJECTIVES

The OWRC Objectives for surface waters is described in a booklet entitled "Guidelines and Criteria for Water Quality Management in Ontario". A copy of the booklet is enclosed in the pocket on the back cover of this report. This publication contains the guidelines and introduces water quality criteria for various uses including public, agricultural and industrial water supply, recreation, aesthetic enjoyment and the propagation of fish and wildlife. The guidelines should be followed to determine the acceptability of a watercourse for various uses.

A few pertinent maximum limits of contaminants in sewage treatment plants and industrial effluents are listed below. Adequate protection for surface waters except in certain specific instances influenced by local conditions, should be provided if the following concentrations and pH range are not exceeded.

5-Day BOD -	not greater than 15 ppm
Suspended Solids -	not greater than 15 ppm
Phenols -	not greater than 20 ppb
pH -	5.5 to 10.6
Iron -	not greater than 17 ppm
Ether Solubles (oil) -	not greater than 15 ppm

GLOSSARY OF TERMS

Bacteriological Examination - The Membrane Filter Technique is used to obtain a direct count of coliform organisms. These organisms are the normal inhabitants of intestines of man and other warm-blooded animals. They are always present in large numbers in untreated sewage and are, in general, relatively few in number in

other stream pollutants.

Biochemical Oxygen Demand (BOD) - The Biochemical Oxygen Demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action.

Solids - Analyses for solids include tests for total, suspended and dissolved solids. The total solids is a measure of a solid in solution and in suspension. Suspended solids indicates the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids is a measure of those solids in solution.

Oils and Ether Soluble Materials - These include oils and all other soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat either for industrial or domestic use. Oils makes streams unsightly and water unfit for bathing.

Phenolic Compounds - The presence of phenol or phenolic equivalents is generally associated with discharges containing petroleum products, or with wastes from some industries. It is generally conceded that adequate protection of surface waters will be provided if the concentration of phenols in waste discharges does not exceed 20 parts per billion (ppb). Phenolic type waste can cause objectionable conditions in water supplies and might taint the flesh of fish.

Alkyl Benzene Sulfonate (ABS) - The Alkyl Benzene Sulfonate portion of the anionic detergents is reported in ppb. The test is generally employed to indicate the presence of domestic wastewater. The popular use of synthetic detergents for general cleaning purposes have resulted in the incidents of residual ABS in streams. As an objective, the ABS concentration should not exceed 0.5 ppm in water used for domestic purposes.

Iron - Water for domestic use should contain less than 0.3 ppm for iron in order to avoid objectionable taste, staining and sediment formation. Iron concentrations of not greater than 17 ppm in waste discharges should permit adequate protection of surface waters.

Nitrogen

Ammonia Nitrogen - or sometimes called free ammonia is the insoluble product in the decomposition of nitrogenous organic matter. It is also formed when nitrates and nitrites are reduced to ammonia either biologically or chemically. Some small amounts of ammonia, too, may be swept out of the atmosphere by rainwater.

The following values may be of general significance in appraising free ammonia content: Low - 0.015 to 0.03 ppm; Moderate - 0.03 to 0.10 ppm; High - 0.10 or greater.

Total Kjeldahl - is a measure of the total nitrogenous matter present except that measured as nitrite and nitrate nitrogens. The total kjeldahl less the ammonia nitrogen measures the organic nitrogen present. Ammonia and organic nitrogen determinations are important in determining the availability of nitrogen for biological utilization. The normal range for total kjeldahl would be 0.1 to 0.5 ppm.

Nitrite Nitrogen - Nitrite is usually an intermediate oxidation of ammonia. The significance of nitrites, therefore, varies with their amount, sources, and relation to other constituents of the sample, notably the relative magnitude of ammonia and nitrite present. Since nitrite is rapidly and easily converted to nitrate, its presence in concentrations greater than a few thousandths of a part per million is generally indicative of active biological processes in the water.

Nitrate Nitrogen - Nitrate is the end product of aerobic decomposition of nitrogenous matter, and its presence carries this significance. Nitrate concentrations is of particular interest in relation to the other forms of nitrogen that may be present in the sample. Nitrates occur in the crust of the earth in many places and are a source of its fertility.

Phosphorus

Total Phosphorus - Total Phosphorus is a measure of both the organic and inorganic forms of phosphorus present.

Soluble Phosphorus - Soluble Phosphorus is a measure of the orthophosphate only and when subtracted from the total phosphorus gives an indication of the concentration of organic phosphorus present, that is, the soluble phosphorus is a measure of the inorganic phosphorus present, except the phosphorus in the form of polyphosphate, which however, in surface waters is usually insignificant. Inorganic phosphorus in concentration in excess of 0.01 ppm may cause nuisance conditions.

APPENDIX II

IMPLEMENTATION OF WATER AND SEWAGE WORKS PROGRAMS

Currently, there are three general methods which may be utilized for implementing sewage and water works programs. These are: 1) to enter into an agreement with the OWRC for the construction of the treatment and collector works with an obligation to pay the debt retirement and operating charges over the term of the agreement with the facility reverting to the municipality at the end of the term of the agreement, 2) by requesting the provision of service from a Provincially-owned project, and 3) by proceeding with the construction independently and meeting capital costs by the sale of debentures.

OWRC/MUNICIPAL PROJECTS

For the construction of water and sewage works under agreement with this Commission, the works are provided and developed under Sections 39 to 46 of the Ontario Resources Commission Act.

For this type of arrangement, the Commission utilizes a sinking fund and consequently the annual payments are based on a specific debt retirement period and the payments are unchanged for the period of the agreement. This type of project may be financed over a period of time up to a maximum

of thirty years. The annual charges for projects constructed under this agreement are determined as follows:

1. Capital Repayment

As noted, OWRC financing is by the sinking fund method and an annual payment of approximately 2 per cent of the capital cost is required to retire a debt over a thirty-year period.

2. Interest

On new Commission projects, interest is calculated at the current rate.

3. Reserve Fund

To provide money for repairs and replacements, Section 40 of the Ontario Water Resources Commission Act provides for the establishment of a reserve fund by the Commission. It is important to note that this fund is established in the name of the municipality and the balance consequently earns interest. It has now been established by Commission minute that the reserve fund billing for each project shall continue only until the fund reaches an amount of ten times the initial annual billing and the reserve fund billing shall be re-imposed only when the fund has been depleted to 80 per cent or less of the maximum amount.

4. Operating Costs

Under OWRC agreement, the municipality is responsible only for the operating costs directly attributed to the project in the municipality. Therefore, no charges are made by the Commission for the services of head office personnel who are available as required to advise on the satisfactory operation and maintenance of the project.

PROVINCIALY-OWNED PROJECTS

In June, 1967, the Honourable J. R. Simonett, Minister of Energy and Resources Management, made an announcement which expanded the authorization of this Commission for the provision of water supply and sewage treatment facilities. This new program allows the Commission to construct entire water and sewage works facilities for small municipalities. The capital costs of these can be amortized over a 40 year period.

A slight variation of this program could be implemented in that the municipality may request that this Commission provide only the major water and sewage works facilities as Provincially-owned works, and develop the water distribution and sewage collector systems under the

standard type of Commission project. It would appear that where applicable, it would be more advantageous for the municipality to proceed on the basis of requesting this Commission to develop entire systems as Provincially-owned works.

The associated cost of supplying these works, including amortization of capital costs, together with operating and maintenance charges, will be recovered by the sale of service to the affected municipalities by rates determined on a usage basis. These facilities will be wholly-owned by the Province of Ontario and the arrangements for service will be formalized by contracts between the Commission and the municipality concerned. The installations will be operated entirely at cost with appropriate provision for adjustment in rate.

DEVELOPMENT

If a municipality, after considering the alternatives, wishes this Commission to consider Provincially-financed projects, application forms should be completed and submitted together with a resolution of the Municipal council. A draft of the suggested wording of the resolution is included with the application forms.

If the proposed works are to be built by the municipality on its own initiative or as a formal project under agreement with this Commission, it is required that the Council retain a consulting engineer to prepare preliminary engineering reports on the proposed work. If a Provincial system is contemplated, no action should be taken with respect to retaining a consulting engineering firm as the Commission will designate a consulting engineer to carry out the Provincial portion of the work and it would be advantageous if the municipal portion be studied and reported on by the same engineer.

Date Due

ONTARIO - MOE		
TERMINAL STREAM: MUSKOKA R.		
Ministry of Environment		
AUTHOR WATER POLLUTION SURVEY		
COMMUNITY OF <u>MACTIER</u>		
TOWNSHIP OF GEORGIAN BAY <u>1972</u>		
DATE DUE	BORROWER'S NAME	ROOM NUMBER

W.Q. LIB